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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,017	11/17/2003	Shaw Voon Wong	WONG3019/JEK	9735
23364	7590	10/09/2007		
BACON & THOMAS, PLLC 625 SLATERS LANE FOURTH FLOOR ALEXANDRIA, VA 22314			EXAMINER BUSS, BENJAMIN J	
			ART UNIT 2129	PAPER NUMBER
			MAIL DATE 10/09/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/713,017

Applicant(s)

WONG ET AL.

Examiner

Benjamin Buss

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 September 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 9-10 and 12-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9-10 and 12-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11/17/2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

This Office Action is in response to an AMENDMENT entered 9/18/2007 for the patent application 10/713,017 filed on **11/17/2003**. The Office Actions of 5/18/2007, 9/20/2006, and 2/1/2006 are fully incorporated into this Office Action by reference. Claims 9-10 and 12-17 are pending.

5

**Priority**

Examiner acknowledges Applicants' claim for foreign priority based on P120024308 filed in Malaysia on 11/18/2002. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

10

**Requirement under 37 CFR 1.105*****Response to Arguments***

Applicant's remarks, see pages 4-5, filed 9/18/2007, with respect to the Requirement for Information under 37 CFR 1.105 have been fully considered and are persuasive. Examiner thanks Applicant for the response to the Requirement for Information under 37 CFR 1.105.

15

Examiner has included another publication by Applicant that was not previously part of the application file and was not submitted by Applicant in response to the Requirement for Information under 37 CFR 1.105. This publication is: **Wong**<sub>1997</sub> ("Development of a Fuzzy-Based Expert System for Metal Cutting Data Selection").

20

**Claim Rejections - 35 USC § 112*****Response to Arguments***

Applicant's arguments, see page 5, filed 9/18/2007, with respect to the rejection of claim 12 as being indefinite have been fully considered and are persuasive. The rejection of claim 12 under 35 U.S.C. §112, second paragraph has been withdrawn.

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**Claim Rejections - 35 USC § 103****Response to Arguments**

Applicant's arguments filed 9/18/2007 have been fully considered but they are not persuasive. In re pages 5-6, Applicant has argued that the present application is entitled to a priority date of 11/18/2002.

5 Examiner agrees that the instant application has a valid claim for foreign priority based on P120024308 filed in Malaysia on 11/18/2002, as acknowledged above.

In re page 6, Applicant has further argued that **Wong<sub>June2002</sub>** ("A fuzzy logic based expert system for machinability data-on-demand on the Internet") was published in June of 2002 and **Wong<sub>Feb2002</sub>** ("Development of genetic algorithm-based fuzzy rules design for metal cutting data selection") was published in February of 2002.

10 Examiner agrees that those publication dates are correct.

In re page 6, Applicant has argued that therefore, neither **Wong<sub>June2002</sub>** nor **Wong<sub>Feb2002</sub>** can be applied as prior art since both were published less than one year prior to the priority date of the present application.

Examiner disagrees. MPEP §706.02 (V)(C) states:

15 If the application claims foreign priority under 35 U.S.C. 119(a)-(d) or 365(a)>or (b)<, the effective filing date is the filing date of the U.S. application, unless situation (A) or (B) as set forth above applies. **The filing date of the foreign priority document is not the effective filing date**, although the filing date of the foreign priority document may be used to overcome certain references. See MPEP § 706.02(b) and § 2136.05. (*emphasis added*)

20 Therefore, the instant application has an effective filing date of 11/17/2003. Then, MPEP §706.02(a) (II)(A) states:

25 ... If the publication or issue date of the reference is **more than 1 year prior to the effective filing date** of the application (MPEP § 706.02), the reference qualifies as prior art under 35 U.S.C. 102(b). ... (*emphasis added*)

Therefore, references qualify as prior art under 35 U.S.C. §102(b) against the instant application if the publication date is more than a year prior to 11/17/2003. As Applicant has stated, **Wong<sub>June2002</sub>** was published in June of 2002 and **Wong<sub>Feb2002</sub>** was published in February of 2002. Therefore, both **Wong<sub>June2002</sub>** and **Wong<sub>Feb2002</sub>** were published more than one year prior to the effective filing date of the instant application, thereby qualifying as prior art under 35 U.S.C. §102(b),

30 Looking at MPEP §706.02(b) and §2136.05, it is clear that although rejections based on 35 U.S.C. §102(e) and/or 35 U.S.C. §102(a) can be overcome using a foreign priority document, a **rejection based on 35 U.S.C. §102(b) cannot be overcome based on a foreign priority document**.



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"Outputs" and "Cutting Speed" and "Feed Rate" or Figure 4: "Recommended Cutting Speed" and "Recommended Feed Rate" and "Depth of Cut" or Figure 5: "Cutting Speed" and "Depth of Cut" and "Hardness");

- means of performing defuzzification of said output data to produce crisp output data (p57-65 especially "Defuzzification" Figure 3); and
- means of conveying said crisp output data to said machining environment (p65-67 especially "can be integrated with CAM and CIM systems" §6 or Figure 4 or "Machining operators and design engineers can obtain most up-to-date and first hand data virtually from anywhere" §6 or "users are expected to revisit the site to collect or seek more machinability data for different conditions" §5).

10 **Wong**<sub>June2002</sub> fails to teach:

- the inference component including a multilayer neural network.

**Takagi** teaches:

- an inference component operative to produce fuzzy output data from fuzzy input data, the inference component including a multilayer neural network and fuzzy control means for applying a set of predefined
- 15 fuzzy rules to fuzzy input data as to produce said fuzzy output data (C1-11 especially "neural network model was learned 5,000 times to obtain the fuzzy number  $A^s$  of the IF part" C8L10-20 or "neural network model at step 5 is used as the THEN part model for inference rule 1 ... neural network model with  $(x_2, x_3)$  inputs is used as the THEN part. The resulting fuzzy model" C8L35-68 or "membership functions of fuzzy inference rules are determined using the learning algorithm of the neural network" C9L20-56 or C9L56-C10L10).

20 Motivation:

**Wong**<sub>June2002</sub> and **Takagi** are from the same field of endeavor, fuzzy inferences of membership functions. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of **Wong**<sub>June2002</sub> by including using a neural network in inferring the fuzzy membership functions as taught by **Takagi** for the benefit of being capable of coping with the inference problem at high speed even it the

25 problem is non-linear (**Takagi** C3L10-35).

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network" C9L20-56 or C9L56-C10L10 or Figure 9 or Figure 8 or Figure 4, including the associated discussion in the disclosure for each figure).

Motivation:

**Wong**<sub>June2002</sub> and **Takagi** are from the same field of endeavor, fuzzy inferences of membership functions. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of **Wong**<sub>June2002</sub> by including using a neural network in inferring the fuzzy membership functions as taught by **Takagi** for the benefit of being capable of coping with the inference problem at high speed even it the problem is non-linear (**Takagi** C3L10-35).

**Claim 12:****Takagi** teaches:

- wherein said multilayer neural network comprises a network of summation neurons and product neurons (C1-11 and especially Figure 9 or Figure 8 or Figure 4, including the associated discussion in the disclosure for each figure).

**Claims 13 and 16:****Wong**<sub>June2002</sub> teaches:

- wherein said input data further comprises tool characteristic data and machining condition data (p57-65 especially "speed [of cut] and feed [rate] are selected according to tool-workpiece material combination, depth of cut, and finishing condition" §1 or "user to enter the inputs, they are tool type, workpiece material hardness and depth of cut" §4 or "covers all materials for all types of possible machining process with all possible types of tool" §6 or Figure 2).

**Claims 14 and 17:****Wong**<sub>June2002</sub> teaches:

- wherein said input data further comprises cutting speed data, feed rate data, tool material data, and depth of cut data (C1-11 especially "speed [of cut] and feed [rate] are selected according to tool-workpiece material combination, depth of cut, and finishing condition. These speed and feed values are just good starting

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**Independent Claim 15:****Wong**<sub>June2002</sub> teaches:

- means operative in response to input data of a workpiece, the input data comprising workpiece characteristic data including at least material type and hardness of the workpiece and depth of cut data (p57-65 especially "speed [of cut] and feed [rate] are selected according to tool-workpiece material combination, depth of cut, and finishing condition" §1 or "user to enter the inputs, they are tool type, workpiece material hardness and depth of cut" §4 or "covers all materials for all types of possible machining process with all possible types of tool" §6 or Figure 2);
- an inference component operative to produce output data according to said input data (p57-65 especially Figure 3: "Inference Mechanism" and "Rule Base"), the output data comprising machining condition data including at least cutting speed data (p57-65 especially "speed [of cut] and feed [rate] are selected" §1 or Figure 3: "Outputs" and "Cutting Speed" or Figure 4: "Recommended Cutting Speed" or Figure 5: "Cutting Speed");
- means of conveying said output data to said machining environment (p65-67 especially "can be integrated with CAM and CIM systems" §6 or Figure 4 or "Machining operators and design engineers can obtain most up-to-date and first hand data virtually from anywhere" §6 or "users are expected to revisit the site to collect or seek more machinability data for different conditions" §5).

**Wong**<sub>June2002</sub> fails to teach:

- the inference component including a multilayer neural network, the multilayer neural network comprising a network of summation neurons and product neurons.

**Takagi** teaches:

- an inference component including a multilayer neural network operative to produce output data from input data, the multilayer neural network comprising a network of summation neurons and product neurons (C1-11 especially "neural network model was learned 5,000 times to obtain the fuzzy number  $A^s$  of the IF part" C8L10-20 or "neural network model at step 5 is used as the THEN part model for inference rule 1 ... neural network model with  $(x_2, x_3)$  inputs is used as the THEN part. The resulting fuzzy model" C8L35-68 or "membership functions of fuzzy inference rules are determined using the learning algorithm of the neural



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estimates" §1 or "showed the feasibility of incorporating depth of cut as one of the continuous parameters required to determine the cutting speed" §1 or "Optimization of the fuzzy model was also carried out using different fuzzy rules" §1 or "user to enter the inputs, they are tool type, workpiece material hardness and depth of cut" §4 or "covers all materials for all types of possible machining process with all possible types of tool" §6 or Figure 2 or Figure 5 or Appendix A or Table 8 or Table 9; *Examiner points out that it would have been well known in the art at the time of the invention to have a feedback loop which would input the actual values of the controlled variables back into the control system*).

**Claim Rejections - 35 USC § 103**

10 Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Wong**<sub>June2002</sub> ("A fuzzy logic based expert system for machinability data-on-demand on the Internet") and **Takagi** (USPN 5,168,549) in view of **Wong**<sub>Feb2002</sub> ("Development of genetic algorithm-based fuzzy rules design for metal cutting data selection").

**Claim 10:**

15 The combination of **Wong**<sub>June2002</sub> and **Takagi** fails to teach:

- wherein said fuzzy rules are optimized according to a genetic algorithm.

**Wong**<sub>Feb2002</sub> teaches:

- wherein said fuzzy rules are optimized according to a genetic algorithm (p1-12 especially §4 or Figure 1).

**Motivation:**

20 **Wong**<sub>Feb2002</sub> and the combination of **Wong**<sub>June2002</sub> and **Takagi** are from the same field of endeavor, fuzzy control. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combined teachings of **Wong**<sub>June2002</sub> and **Takagi** by optimizing the fuzzy rules with a genetic algorithm as taught by **Wong**<sub>Feb2002</sub> for the benefit of using a popular tool which has been used to effectively find optimal solutions for a variety of problems to replace the tedious process of trial and error for better combination of

25 fuzzy rules (**Wong**<sub>2000</sub> "Optimization of fuzzy rules design using genetic algorithm" §1).

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**Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- **Wong<sub>1997</sub>** ("Development of a Fuzzy-Based Expert System for Metal Cutting Data Selection").

5    **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

10        A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Claims 9-10 and 12-17 are rejected.

15

**Correspondence Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin Buss whose telephone number is 571-272-5831. The examiner can normally be reached on M-F 9AM-5PM.

20

As detailed in MPEP 502.03, communications via Internet e-mail are at the discretion of the applicant. Without a written authorization by applicant in place, the USPTO will not respond via Internet e-mail to any Internet correspondence which contains information subject to the confidentiality requirement as set forth in 35 U.S.C. 122. A paper copy of such correspondence will be placed in the appropriate patent application. The following is a sample authorization form which may be used by applicant:

25

"Recognizing that Internet communications are not secure, I hereby authorize the USPTO to communicate with me concerning any subject matter of this application by electronic mail. I understand that a copy of these communications will be made of record in the application file."


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Vincent can be reached on 571-272-3080. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

5 Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Benjamin Buss  
Examiner  
Art Unit 2129

/BB/

  
DAVID VINCENT  
SUPERVISORY PATENT EXAMINER